

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
7 June 2001 (07.06.2001)

PCT

(10) International Publication Number  
**WO 01/40968 A2**

(51) International Patent Classification: **G06F 17/00**

(21) International Application Number: **PCT/EP00/11891**

(22) International Filing Date:  
28 November 2000 (28.11.2000)

(25) Filing Language: **English**

(26) Publication Language: **English**

(30) Priority Data:  
9928338.4 30 November 1999 (30.11.1999) **GB**

(71) Applicant and

(72) Inventor: **MOGHUL, Saeed, Mohamed** [GB/GB]; 18  
haywards, Pound Hill, Crawley, West Sussex RH10 3TR  
(GB).

(74) Agents: **HUGHES, Andrea, Michelle** et al.; Frank B.  
Dehn & Co., 179 Queen Victoria Street, London EC4V 4EL  
(GB).

(81) Designated States (*national*): **AE, AG, AL, AM, AT, AT**  
(utility model), **AU, AZ, BA, BB, BG, BR, BY, BZ, CA,**

**CH, CN, CR, CU, CZ, CZ** (utility model), **DE, DE** (utility  
model), **DK, DK** (utility model), **DM, DZ, EE, EE** (utility  
model), **ES, FI, FI** (utility model), **GB, GI, GE, GH, GM,**  
**HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KR** (utility  
model), **KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG,**  
**MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD,**  
**SE, SG, SI, SK, SK** (utility model), **SL, TJ, TM, TR, TT,**  
**TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.**

(84) Designated States (*regional*): **ARIPO** patent (**GH, GM,**  
**KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW**), **Eurasian**  
patent (**AM, AZ, BY, KG, KZ, MD, RU, TJ, TM**), **European**  
patent (**AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE,**  
**IT, LU, MC, NL, PT, SE, TR**), **OAPI** patent (**BF, BJ, CF,**  
**CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG**).

**Published:**

— *Without international search report and to be republished  
upon receipt of that report.*

*For two-letter codes and other abbreviations, refer to the "Guid-  
ance Notes on Codes and Abbreviations" appearing at the begin-  
ning of each regular issue of the PCT Gazette.*

(54) Title: **SEARCH SYSTEM AND METHODS**

(57) Abstract: The invention relates to systems and methods for providing and accessing searchable information, particularly via the Internet, whereby the search for suitable service providers is based upon information specific to the service providers and information specific to the person carrying out the search, in particular to the geographical locations of the searcher and the service providers, to produce search results which are more useful and more appropriate to the user.

**WO 01/40968 A2**

## SEARCH SYSTEM AND METHODS

5 The present invention relates to a system and methods for providing and accessing searchable information, particularly via the Internet.

10 The Internet has become increasingly important to business users, for providing information on the goods and services they offer. It has also become an important tool for users looking for specific information. However, the Internet now contains a vast amount of information and, because this information is so diverse and wide-ranging and formatted in many different ways, the information required is not always easily found.

15 This makes the Internet less efficient than it could be for advertisers and businesses, as there is no guarantee that their services will be found by users looking for something within their range of specialisation. The user looking for information may also find less information than is actually available.

20 Because of the increasing amount of information held on the Internet, there has become a need for efficient and reliable information retrieval and various search engines have evolved.

25 A Search Engine is essentially a large database of links to different documents on the Internet. The person looking for the information, a 'Web Browser Client', can enter one or more keywords. The Search Engine then searches for the occurrence of these words throughout the entire database of all documents indexed. Any article or document that contains the selected keyword(s) is presented to the user as a 'hit'. Hits in the list can be selected and the document to which the hit relates can then be called up from its address on the Internet.

35 There are a number of mainstream search engines, for example, Lycos, Yahoo, Alta Vista. These all

provide links to information from the whole of the Internet which has been collected by 'Internet Spiders'. These 'Spiders', also known as 'Robots' or 'Crawlers' are automated programs which go from site to site recording and following links provided at the sites. The 'Spider' travels from URL (Uniform Resource Locator) to URL, recording the full text of every page, and then continues by following external links. The sites are periodically revisited to refresh the recorded information.

The sites are indexed on the basis of content, and particularly based on the html code. They work on the basis of algorithms, i. e. the number of times a keyword or text appears. The 'Spider' collects the information and returns it to the database for indexing. If this matches the search request, the database calls up the site located, usually listing the site in the list of hits based on the number of times or the relevance of occurrence of the selected keyword(s).

Because the mainstream search engines work using information collected by Internet Spiders, they essentially all report on the same data set.

The Search Engines all also basically use the same rules for searching or identifying the business that the user is looking for.

The Search Engines essentially operate on a keyword basis. They assign 'points' to web site where hits occur, based on the prominence of the keyword, i. e. how early the keywords appear; the frequency of appearance of the keywords in the document; the popularity of the site, i. e. the number of reciprocal links to the site; the number of keywords found at that site as a percentage of the total number of keywords found in the search; the proximity of the keywords in relation to the words with a similar meaning and the placement of the keywords on the site.

Although the Search Engines are useful in that the

user can input keywords and have access to a wide range of information, several problems have been identified including:

5 The information held on the database is not always up to date. Indeed, the information may have even been removed, in which case the search engine might list it but the link to load the information will produce an error.

10 Because the system is keyword based, some companies which provide relevant information for the user, may not be found because they use different words to describe their products/services. This is disadvantageous to the businesses providing the information and also to the searcher.

15 Submitting information to search engines requires the users to follow set rules and restrictions as to the presentation of the information.

20 Because these mainstream search engines search for documents containing the keyword(s) on the entire Internet, as described above, the amount of information returned can, in many cases, be overwhelming. Furthermore, many 'hits' may not, in fact, be relevant and may have only been found because they incidentally include the selected keyword.

25 As mentioned above, the search systems search the entire Internet and the information is, therefore, global. The search engine will, therefore, find all items on the Internet containing the selected keyword(s), worldwide. Much of this information will, therefore, not be useful to the user, particularly in  
30 the situation where the user is looking for businesses or companies which provide goods or services locally.

Furthermore, the method used by search systems for sorting and refining the information found is very rigid  
35 which can lead to problems in locating the correct information.

Some of the problems identified with the search

engines, particularly the problems of providing too much irrelevant information when, for example, the user is looking for local information, have been solved by another form of business indexing - Business

5 Directories. Many of these Business Directories provide information on a local or regional basis.

To find a service provider listed in a business directory, the user searches through an alphabetical listing of business names or, first, selects a business  
10 classification and then selects a service provider or company from the list of companies advertised in the selected category.

The advantage of these systems is that they only hold information about businesses, and are generally  
15 restricted to a specific area, rather than being global. This is more useful for a searcher who is looking for a particular service provider within a particular geographical area.

Although these Business Directories again have  
20 proved very useful, they still suffer from a number of limitations:

Each directory is 'local' and, therefore, only contains information about businesses within a specified area. The usefulness of each directory, therefore, is  
25 limited to users in that locality or looking for business in that locality.

Furthermore, these business indexes only contain lists of businesses, generally sorted into different business classifications. They do not contain any  
30 further information about the activities of the businesses and, therefore, will only be found if the user actually selects the correct category. This can be difficult, for example, where a business perhaps provides goods or services in an unusual field or in  
35 several different fields and where the searcher perhaps selects a slightly different category.

As these directories are limited to specified

geographical locations, generally based on towns, counties etc., they would not provide information on service providers outside of that town, even though, because of the particular location of the searcher, the service provider may, actually, be closer to the searcher.

One example of a business directory is the Yahoo Yellow Pages Directory, which does go some way to meeting the problems identified above. The directory is a business index list which is fairly complete. It gives a distance, in miles, of the location of the business or service provider from the geographical position of the location being searched. The results page gives the business name and address and also provides links to a new page which shows a local map, and provides links to the Service Provider's website.

This directory is, however, still restricted to geographic boundaries or locations and only lists businesses in business categories. No further information is provided on the various businesses listed.

Another example of a business directory is the Scoot Yellow Pages which is a directory with a conventional directory lookup mechanism. The user selects a business classification, a subclassification and the geographical area within which to search. This system, however, suffers from the same problems as above, relating to the geographical restrictions and still depends on the business being categorised correctly and the searcher selecting the same category.

Another local business directory is the Thomweb Directory in which the user selects a search area by town. This then accesses the local directory for that town and, again, searches are carried out according to business categories.

There is one business directory, 'AskAlex', which allows the user to search for information by inputting

keywords and selecting a search region, i. e. a town, county or national (UK). The results are not, however, ordered in any way and some of the service providers listed have not utilised the keyword facility. Thus, there is no guarantee that all appropriate service providers will be found by a keyword search.

The present invention aims to solve the problems identified with Search Engines and Business Directories by providing a powerful Business Search System in which the information found is information more targeted to the requirements of the searcher.

The searcher will not be presented with an overwhelming amount of information most of which is not useful to him. Furthermore, service providers providing information on the system will have a greater chance of being found by searchers who are likely to require their services.

According to one aspect of the present invention, there is provided an information search system comprising a database containing information on a plurality of service providers, the information including an indication of the geographical location of each of said service providers; means for inputting search criteria and means for inputting or obtaining information indicative of the geographical location of a user; the search system further comprising means for selecting one or more of said service providers based on the input search criteria, the geographical location of the service provider and the geographical location of the user.

According to a second aspect of the invention, there is provided an information search system comprising a database containing information on a plurality of service providers, the information including service provider specific parameters for each of said service providers; means for inputting search criteria and means for inputting a user-specific

parameter; the search system further comprising means for selecting one or more of said service providers based on said search criteria, the service provider-specific parameter and the user-specific parameter.

5        Whilst the user-specific parameter is, preferably, an indication of the geographical location of the user, it may, instead, or also, include other information about the user used to restrict the search.

10        According to a third aspect, there is provided a method of identifying information stored in a database containing information on a plurality of service providers, the method comprising inputting search criteria and one or more user-specific parameters, comparing said search criteria and said user-specific  
15        parameter(s) with information stored for each of said business providers, and identifying those of said business providers for which information is stored corresponding to said search criteria and said user-specific parameter(s).

20        Again, preferably, the user-specific parameter is an indication of the geographical location of the user and the information for each of said service providers contains information on the geographical location of the service provider. The search criteria may include an  
25        indication of the search range with respect to the geographical location of the user such that only the service providers whose geographical location falls within said range are identified.

30        According to a fourth aspect, there is provided a method of providing searchable information on a database, comprising providing a database of service providers, the database comprising information on each of said service providers including a number of keywords defining the services provided by said service provider,  
35        and an indication of the geographical location of each of said service providers.

In all of the aspects of the invention, the

information provided on the plurality of service providers preferably includes information on the services provided, in the form of a number of 'keywords', the search criteria may then include one or more keywords and those service providers having keywords corresponding to the keywords included in the input search criteria will then be identified. In the preferred systems, where key-words are used as search criteria, only those service providers whose information includes such keywords, and which also match the other criteria, e. g. have a geographical location falling within the specified range with respect to the user's geographical location, will be selected.

According to another aspect of the invention there is provided a system whereby a telephone connection can be made between a user and a service provider, wherein the user requests the connection by inputting a command to a computer, and wherein the computer uses information on the user's telephone number and the service provider's telephone number to make a telephone connection between the two parties.

In the preferred embodiment of this aspect of the invention, the user and the service provider both pay a percentage of the call cost, the total amount payable by the user and the service provider amounting to more than 100% of the actual call charge.

Preferred embodiments of the present invention will now be described, by way of example only.

Essentially, the business search system of the invention contains 'pages' of information about service providers, with all of the key words describing the services/goods provided by the service providers being indexable. Information is also stored about the geographical location of each service provider.

When a user wishes to search for a business for a particular purpose, the search system selects service providers based on the information stored about them and

also based on one or more parameters specific to the user. In particular, the 'hits' produced by the search may be selected based on the actual location of the user and on the geographical location of the service provider, in relation to the user (which may be defined by a number of different parameters, e. g. postcode, town, telephone number, distance away from the user's geographical location, etc.).

Other features specific to the user may also affect the search results and a user profile may be built up to focus the search hits even more to the requirements of the user.

The main advantage of the system of the present invention is that the information presented as 'hits' is more targeted to the user, based on the actual geographical location of the user and/or other user-specific parameters, i. e. the search system also uses information about the user in locating appropriate hits.

The database searched is made up of pages of information about the different service providers subscribing to the system. Each service provider provides their own page of information about their business or company, outlining their main services and products. This page can be in any format, and the service providers can use their own corporate style, typeface, colouring, images, etc. All of the textual information on the page can be indexed so that a searcher can carry out a search by a keyword and will find businesses or companies incorporating that keyword in the description of that company, services and products. When a service provider is located in a search, the searcher can then look at the 'page' of that service provider to get a better idea of the nature of the company.

A business which subscribes to or registers with the system may also be given a system address in the form of a URL or Sub-URL defined under the domain name

of the system.

Each service provider may also be assigned a unique alphanumeric identification number which will allow the user to identify a business merely by entering that number, rather than having to type a long URL.

Also, or alternatively, businesses may be provided with a 'meaningful' or easy to remember or easy to guess URL.

The 'page' of information provided on the system also acts as a virtual 'single page Website' allowing the company to advertise its services and products to a wide audience.

Whilst most subscribers will submit a page having a number of keywords against which users can search, it is envisaged that there would also be a second group of users, perhaps being allowed a free listing. This will allow the business index to be complete, but it is envisaged that businesses requesting a 'free listing' will not be allowed to register keywords and will only be indicated as a hit if the business falls within a particular business classification searched by the user. Such businesses would also be 'low priority' and would be named at the end of any listing. With these listings, a logging system may be provided which indicates the number of times that such an entry is listed as a hit. This may encourage free listed business to register as fully paid-up subscribers.

It will be possible for service providers to have all words provided on the page indexed. Alternatively, they may specify keywords to be indexed.

Amongst other parameters, a service provider will be required to provide the following information:

company name, contact details and postcode,  
company information for the creation of the  
information page,  
keywords to be indexed,  
opening hours

availability of facilities for disabled people,  
etc.

accreditations held, e. g. hotel star  
classification,

5 business facilities, e. g. extra services or  
facilities which the business can provide,  
etc.

Electronic forms may be provided on the system to  
allow the service providers to obtain specific  
10 information from users e. g. when quoting for insurance,  
etc. These forms may be associated with a specific  
service provider and/or standard forms may be provided  
for use by a particular industry sector, e. g. insurance  
companies.

15 The service provider may link into the electronic  
form system at a later date. A business classification  
may hold an electronic form link-number. If a business  
classification has more than one electronic form, the  
various forms may be selectable from an advanced Search  
20 Page.

The system will have the ability to be extended to  
include further classifications. Furthermore, if, for  
example, a class of service providers are found later to  
have specific requirements, the database can be later  
25 enhanced by attaching new tables that record the  
information that those service providers wish the user  
to search on. Thus, the database will gradually build  
up by the addition of new tables to meet specific  
requirements of various business sectors. For an  
30 example, for car hire companies, a database extension  
could be added later to hold types of vehicles and hire  
rates, allowing users to find a car within their budget.

When a user wishes to carry out a search for  
service providers meeting his requirements, in addition  
35 to the keyword or business category information, the  
user would also define the 'local' area to be searched  
in relation to his own location. The search system of

the invention gives information in a 'local' area where 'local' is defined by the user. The user can define the search area in terms of miles around his position, in a specific town, region, postcode area, telephone code area, a country, the world, etc. For example, the user may define the local parameter in terms of a telephone number. Then, all business meeting the specified search criteria (keywords etc.) that have the specified dialling code will be returned. This is useful, for example, if the user is looking for entries which can be called at a local call cost.

Alternatively, the user can define 'local' by naming a town, county or region. All businesses meeting the specified search criteria that are in the town etc. selected will then be returned. This is useful if the user wants to send post to local companies or to travel there easily.

Alternatively, the user may specify a radius around his location within which the search results are to be restricted.

Another parameter which may be used to define what is meant by 'local' is the postcode and only businesses having that specific postcode will be selected.

The user also needs, when using the system for the first time, to enter his own geographical location. A 'cookie' placed on the user's hard disc will allow the user's input to be saved in the database so that when the user carries out a search a second time or on subsequent occasions, the information does not need to be input again.

The user can then search for information or business listings meeting his requirements by entering one or more keywords either with or without a business classification.

The user will be required to enter various criteria to enable a search to be performed. It is envisaged that various types and levels of searching will be

available.

The 'basic search' will require the minimum amount of data and will be the default search method. The user will enter a keyword and/or a business classification and may also define a search area. If not, the default search area of, e. g., a five mile radius around the user's location will be used.

Another type of search envisaged is a 'step-by-step' search which will allow users to perform a more advanced or 'power' search with the system. The system will structure queries by getting the user to answer simple questions and building up a complex search strategy.

There will also be an advanced or 'power' search mode in which the user can enter an optional number of items. The user can specify which server should be searched, e. g. a world server, a continent server, a country server or a town server and can specify the radius, in miles or kilometres, of a given location within which the search results should be found. The forms, for particular industry sectors or service providers may also be provided in this advanced search mode and will allow the service providers to have more customised searches. More advanced search pages may be available and may interact with the user for the transfer of information between the user and the service provider.

To further focus or target searches to the particular user, information about the user, e. g. from a user's profile and/or built up from previous searches, may be incorporated into the search parameters automatically from the user's 'cookie' or input later by the user.

In addition to the search results being more focused, special offers, schemes, etc. which may be useful to the user, based on the user's profile, may be displayed.

Where a user's profile has been established, previous searches can also be saved and presented to the user on returning to the site.

5 The search results are presented on a 'results page' which may be sortable in a number of various ways including:

by distance from the user,

by company name,

by business classification,

10 by the significance of the keyword in the service provider's page, e. g. its position, its frequency of occurrence, etc.,

by the significance of the service provided to the user based on the user's profile, e. g. if the user  
15 is a student and the service provider gives a student discount, this company could be listed higher.

The search results page may also indicate, for example, which companies currently have special offers  
20 available, which companies have, for example, facilities for disabled people, etc. The list may also allow users to select the service provider's information for printing, display or for linking directly to the service provider's page.

25 If a user selects a service provider listed and wishes to view their page, he may, for example, click on the name of the provider and the page will be displayed, providing more information about that particular service provider. This page may then provide links to forms,  
30 etc. to allow the user to provide required information, e. g. for quotation.

Each service provider may also have, associated with their postal address, an on-line map providing  
35 information to users as to how to locate the business, etc.

A facility may also be provided for service providers to indicate special offers, etc. The service

provider may specify a limited time during which the special offer is to be available and the indication of the offer may be deleted automatically at the end of that time.

5        Another facility which may be provided is a button on the service provider's page which automatically sends the service provider's business card as an e-mail to the user.

10       Other facilities allow the user to be put on a mailing list of the service provider or to link to the service provider's main website or to recommend the company to somebody else, etc.

15       A search may be further enhanced by the use of by so-called 'Activity Assistants'. A service provider can submit information to be listed by an 'Activity Assistant', which can then be searched by a user. Essentially, an Activity Assistant will identify service providers according to an activity carried out by the user. For example, a user wishing to organise an  
20       outdoor birthday party for a child may locate details of service providers providing children's entertainment, equipment for events, e. g. marquees, caterers, toy shops, etc.

25       A similar 'Business Assistant' facility may also be provided in searching for service providers that can assist a business type. For example, a business owner can use a Business Assistant to locate all service providers that have listed themselves as being potentially useful to that business.

30       One of the main features of the system of the present invention is that the search results are presented and controlled to some extent by a parameter or parameters specific to the user, for example a user's geographical location. The search may be even more  
35       targeted by building up a 'user profile' containing more information about the user to be used in carrying out the search. The more data that the user provides, the

better and more suitable will be the results provided by the search system. For example, the user may specify his marital status, age group, religion, disabilities, hobbies etc. These profiles may be stored against the 'cookie' on the user's hard disc and accessed and incorporated into the search criteria whenever a user revisits the search system site.

In addition to information on businesses appropriate to the user's requirements, further information may also be presented to the user based on the user's location, or other user-specific parameters. For example, community information pages may be presented to the user for the user's local area. This may include, amongst many other things, facilities provided in the region, local government information, radio stations, TV stations, useful information, useful contact numbers, weather, etc. Local jobs could also be advertised to the user, as well as local announcements on events, etc., advertisement, etc., functions, etc. Which things are displayed may be controlled partly or fully according to the user's profile, to ensure that only information relevant to the user is displayed.

Service providers registered with this system may have their number of search hits logged, to allow the service providers to assess the effectiveness of the system as an advertising mechanism. Statistics may be provided on, for example, the number of hits on the user's classification, the number of hits on the business, the number of hits from an Activity Assistant and/or a Business Assistant and the total number of hits.

The system may also log the number of page visits, the number of times the service provider was automatically telephoned from the site, the number of times the information about the service provider was printed out, the number of times any e-mails were sent to or from the page (if appropriate), etc. The

statistical information may be further broken down into, for example, the number of visitors to the page at different time bands, daily, per month, etc. This may also be tied up with user profile information so that the service provider can have some idea of the type of person visiting their site. Statistics on the geographical location of the visitors to sites may also be provided. In this way, service providers can plan their business and future advertising taking into account the current market requirements.

Feedback pages may also be provided for use by the user.

A facility may also be provided to Service Providers to control their inclusion on Search Results pages. For example, a search provider may choose to be listed only if the searcher is within a certain distance from the Service Provider's position, or in a certain telephone area code, or post code area, or town.

Another preferred feature provides a mechanism for users to set up a telephone call with the service provider merely by clicking a button on the screen. In connection with this service, various charging and call charge allocation structures can be provided.

The service providers may have, on their information page, a 'Connect to Service Provider' button. If the user wishes to make a call to the service provider he can merely click on this button. The system knows the user's telephone number and also knows the service provider's telephone number and uses this information to set up a telephone connection between the two parties. The information is preferably provided to a third party who will establish the telephone link and ensure that both parties are billed for the same call.

Usually with such systems, the user or calling party is charged for the call. In the preferred system, however, the search system provider or a third party can

provide the connection and the call charges can be allocated between the user and the service provider.

For example, in one preferred system, when a user wishes to call a service provider, he clicks on the 'Connect to Service Provider' button on the service provider's page. The user is then warned, by a message, that he will be charged for the call at a specified discount, e. g. 20%, and, if he accepts this, he should press or click on a continue button. When the user accepts, a message is generated by the system and sent to a third party to connect the user's telephone number with the service provider's telephone number at a particular time, as chosen by the user.

This information can be used by a third party to connect the two parties and, at the same time, to charge both parties at a rate which is lower than they would be charged if they would call conventionally. This allows the overall call costs to be increased, whilst reducing the costs to the individual parties.

The advantage of this arrangement to the user is that his call will be discounted by 20% and also that the call could be made via the computer without the user having to physically pick up the telephone and dial.

Although the service provider will have to meet part of the call costs, this will usually be acceptable as he will be calling a potential customer.

A third party can collect, from the two connecting parties, over 100% of the call cost. The call cost would then be paid to the telephone company, leaving a profit to be split between the search system provider and the third party company providing the call connection and inter-carrier-billing.

The system could be used on an international basis, using the principles described above. A service provider may indicate whether or not they do wish to be listed for international business. To allow this, the

address field of the search system will need to be internationalised. One possible way is to include a 'Country Address Format' table as shown below (table 1). For each country, the field labels should be taken from the table and information entered according to the field.

The location should be determined from the postcode.

Each server may use different rules for addresses/postcodes.

Country Code	Field 1 Label	Field 2 Label	Field 3 Label	Field 4 Label	Field 5 Label	Field 6 Label	Field 7 Label	Field 8 Label
USA	Name	Company Name	Address 1	Address 2			Zip Code	
UK	Name	Company Name	Address 1	Address 2	Town	County	Post Code	

TABLE 1

As discussed above, using the search system of the present invention, the search results are not restricted to already-defined boundaries such as known towns, counties, etc. but can still give the searcher true 'local' results set. The definition of 'local' is controlled by the user.

As mentioned above, when a user first visits the search system site and requests a search within a given radius, the system will ask for the user's location. This location can be specified as a postcode, town name, etc. and the system may then convert this to a map grid reference.

When this information is known, the system can start to query the database for the search results and the query will be built with e. g. the following parameters:

user specified search parameters,  
optimized for the user's profile, depending on what is being searched, and

such data to fall in the region of x and y grid limits as shown below.

Assume that

the user's position is given by  $(x_u, y_u)$  and known because  
5 the system will determine it on day 1;

the area to search is a radius (R) in miles/km, round the user's position.

We can perform a data query to determine all service providers that satisfy the other requirement of the user and  
10 have an x coordinate that lies between  $(x_u - R)$  and  $(x_u + R)$ , and have a y coordinate that lies between  $(y_u - R)$  and  $(y_u + R)$ .

The information that is returned is all service providers within a square area whose side is  $2R$ , centered on the user's position at  $(x_u, y_u)$ . To refine this information to  
15 the required data set, we need to do a calculation on all the point found thus far.

By calculating the linear distance between the service provider's grid location and the user's grid location, we can immediately produce a list of service providers ordered 'in  
20 distance from the user'.

$$\text{Straight Line Distance} = \sqrt{((x_{sp} - x_u)^2 + (y_{sp} - y_u)^2)} \text{ (km)}$$

The system will be able to give the results in the  
25 user's preferred units simply by multiplying the results with the appropriate factor.

Depending on the accuracy of Post Codes/grid references data and specified radius R, the system will round up or down the calculated value by an appropriate value.

30 The system of the present invention is particularly advantageous over the prior art in that businesses are searched according to user-specified criteria and can be ordered according to the distance from the user and, if desired, according to other user-specific criteria.

35 The user can be given some indication of the significance of the search result, e. g. how close the search system believes that the company has matched the user's

criteria. Furthermore, where a user's profile has been set up, a 'significance value' can be attached to the appropriateness of the company to the user's profile.

5 The system is, therefore, an efficient and powerful search system for putting suppliers of products and services in touch with customers and allowing searchers to locate targeted suppliers.

10 Users will be able to search for businesses using keywords, rather than being restricted to searching in specified business categories and will also be able to specify the 'local' area within which the search is to be carried out. The search is, therefore, much more focused and accurate both for the user and for the service provider.

15

CLAIMS

1. An information search system comprising a database containing information on a plurality of service providers, the information including an indication of the geographical location of each of said service providers; means for inputting search criteria and means for inputting or obtaining information indicative of the geographical location of the user; the search system further comprising means for selecting one or more of said service providers based on the input search criteria, the geographical location of the service provider and the geographical location of the user.
2. An information search system comprising a database containing information on a plurality of service providers, the information including service provider-specific parameters for each of said service providers; means for inputting search criteria and means for inputting or obtaining a user-specific parameter; the search system further comprising means for selecting one or more of said service providers based on said search criteria, the service provider-specific parameter and the user-specific parameter.
3. A system according to claim 2, wherein said user-specific parameter is an indication of the geographical location of the user.
4. A method of identifying information stored in a database containing information on a plurality of service providers, the method comprising inputting search criteria and one or more user-specific parameters, comparing said search criteria and said user-specific parameter(s) with information stored for each of said business providers, and identifying those of said business providers for which information is

stored corresponding to said search criteria and said user-specific parameter(s).

5 5. A method according to claim 4, wherein the user-specific parameter is an indication of the geographical location of the user, and wherein the information on said plurality of service providers includes information on the geographical location of said service providers.

10 6. A method according to claims 4 or 5, wherein said search criteria includes an indication of the search range with respect to the geographical location of the user such that only the service provider whose geographical location falls within said range are  
15 identified.

20 7. A method of providing searchable information on a database, comprising providing a database of service providers, the database comprising information on each of said service providers including a number of keywords defining the services provided by said service provider, and an indication of the geographical location of each of said service providers.

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
7 June 2001 (07.06.2001)

PCT

(10) International Publication Number  
**WO 01/040968 A3**

(51) International Patent Classification<sup>7</sup>: **G06F 17/30**

(21) International Application Number: PCT/EP00/11891

(22) International Filing Date:  
28 November 2000 (28.11.2000)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
9928338.4 30 November 1999 (30.11.1999) GB

(71) Applicant and

(72) Inventor: **MOGHUL, Saeed, Mohamed** [GB/GB]; 18  
haywards, Pound Hill, Crawley, West Sussex RH10 3TR  
(GB).

(74) Agents: **HUGHES, Andrea, Michelle** et al.; Frank B.  
Dehn & Co., 179 Queen Victoria Street, London EC4V 4EL  
(GB).

(81) Designated States (*national*): AE, AG, AI, AM, AT  
(utility model), AU, AZ, BA, BB, BG, BR, BY, BZ,  
CA, CH, CN, CR, CU, CZ (utility model), CZ, DE (utility

model), DE, DK (utility model), DK, DM, DZ, EE (utility  
model), EE, ES, FI (utility model), FI, GB, GD, GE, GH,  
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR (utility  
model), KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD,  
MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU,  
SD, SE, SG, SI, SK (utility model), SK, SL, TJ, TM, TR,  
TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.

(84) Designated States (*regional*): ARIPO patent (GH, GM,  
KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian  
patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European  
patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE,  
IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF,  
CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

**Published:**

- with international search report
- before the expiration of the time limit for amending the  
claims and to be republished in the event of receipt of  
amendments

(88) Date of publication of the international search report:  
28 November 2002

For two-letter codes and other abbreviations, refer to the "Guid-  
ance Notes on Codes and Abbreviations" appearing at the begin-  
ning of each regular issue of the PCT Gazette.

(54) Title: **SEARCH SYSTEM AND METHODS**

(57) Abstract: The invention relates to systems and methods for providing and accessing searchable information, particularly via the Internet, whereby the search for suitable service providers is based upon information specific to the service providers and information specific to the person carrying out the search, in particular to the geographical locations of the searcher and the service providers, to produce search results which are more useful and more appropriate to the user.

WO 01/040968 A3

## INTERNATIONAL SEARCH REPORT

Int. Application No

PCT/EP 00/11891

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 G06F17/30

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 G06F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ, IBM-TDB, INSPEC

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 853 287 A (NOKIA MOBILE PHONES LTD) 15 July 1998 (1998-07-15) column 10, line 19 -column 11, line 12 claims 1-8 ---	1-7
X	US 5 930 474 A (NAGELKIRK JOAN ET AL) 27 July 1999 (1999-07-27) column 2, line 42 -column 4, line 40 ---	1-7
E	US 6 377 961 B1 (RYU YEON-SEUNG) 23 April 2002 (2002-04-23) column 2, line 28 -column 3, line 10; figures 5,6 column 4, line 49 -column 5, line 44 -----	1-7
X	& KR 99 066 251 A (SAMSUNG ELECTRONICS CO. LTD.) 16 August 1999 (1999-08-16) abstract	1-7

☐ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

## \* Special categories of cited documents:

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

- \*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- \*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- \*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- \*&\* document member of the same patent family

Date of the actual completion of the international search

20 September 2002

Date of mailing of the international search report

26/09/2002

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Henneman, P

# INTERNATIONAL SEARCH REPORT

Information on patent family members

In International Application No

PCT/EP 00/11891

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
EP 0853287	A	15-07-1998	FI 965278 A	01-07-1998
			CA 2225191 A1	30-06-1998
			EP 0853287 A2	15-07-1998
			JP 10257100 A	25-09-1998
			US 6154745 A	28-11-2000
<hr/>				
US 5930474	A	27-07-1999	NONE	
<hr/>				
US 6377961	B1	23-04-2002	NONE	
<hr/>				

Form PCT/ISA/210 (patent family annex) (July 1992)